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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,326	04/28/2004	Emily F. Gallagher	BUR920030170US1	3325
29505	7590	11/25/2005	EXAMINER	
DELIO & PETERSON, LLC 121 WHITNEY AVENUE NEW HAVEN, CT 06510			CHANG, AUDREY Y	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 11/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/709,326		GALLAGHER ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Audrey Y. Chang		2872	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 September 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 6 and 9-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, and 9-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
       Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
       Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Remark*

- This Office Action is in response to applicant's amendment filed on September 12, 2005, which has been entered into the file.
- By this amendment, the applicant has amended claims 1, 3, 9-10, 14-19, 21-24, 29 and 30, has canceled claims 4-5, 7-8 and has newly added claims 31-34. The applicant is respectfully reminded to place the claim list on **separate pages** in the amendment.
- Claims 1-3, 6, and 9-34 remain pending in this application.

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "first thickness", the "second thickness" and the "third thickness" recited in claim 23, (**due to the amendment to the claims**) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be

Art Unit: 2872

notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

**2. Claims 10, 19, 33 and 34 are objected to because of the following informalities:**

(1). The amended phrase “capable of preventing any damage” recited in amended claims 10 and 19 is confusing and indefinite since it is not clear if the phrase after the term “capable” is an intended use or not. The specification fails to what kind of material is “capable of preventing any damage and distortion to said monolithic optical pellicle“. What kind the material that is capable of preventing ANY damage to the pellicle? “

(2). The phrases “*vertically* mounted” and the phrase “*horizontally* mounted” recited in claims 33 and 34 are confusing and indefinite since it is not clear with respect to what is this “vertical” or “horizontal” referred. Also how can the optical pellicle be “*vertically* mounted” to the photomask, if the vertical is referred the *relative direction* between the recessed portion and the photomask.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2872

4. Claims 1-3, 6, 9-17, 30 and newly added claims 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Okada et al (PN. 6,744,562) in view of the patent issued to Nistler et al (PN. 6,410,191).

*Claim 1 has been significantly amended to introduce new claims combinations and new features that necessitate the new grounds of rejection.*

Okada et al teaches an *optical pellicle* that is comprised of a *transparent* plate having a *pellicle sheet* (4) serves as the *recessed portion* with a *first thickness* about 0.8 mm or 800 micrometer, (please see column 5, line 58) and a *pellicle frame* (3, Figure 1) serves as the *perimeter* of the plate having a *second thickness* ranging from 1 to 3 mm or even 4 mm, (please see column 4, lines 39-40, and column 5, line 27), wherein the pellicle frame entirely surrounding said recessed portion or the pellicle sheet and the pellicle sheet and pellicle frame together serves as the optical pellicle. Okada et al further teaches that the pellicle frame has a plurality of openings (1, Figure 1) traversing through the pellicle frame or perimeter for introducing a gas flow over the recessed portion upon mounting the optical pellicle to a photomask, (5).

This reference has met all the limitations of the claim. Okada et al teaches that both the pellicle frame and the pellicle sheet are made of *quartz* but it does not teach explicitly that the pellicle frame and pellicle sheet are made of a monolithic single piece pellicle. Nistler et al in the same field of endeavor teaches a method for making monolithic pellicle-like optical element having *perimeter* of a transparent plate entirely surrounds a recessed portion, (please see Figures 1A-1C). It is really within the general skill of a worker in the art and it would have been obvious to one skilled in the art to adopt the teachings of Nistler et al to modify the pellicle of Okada et al to make the pellicle frame and pellicle sheet in a single monolithic piece, (for they are made of same material as taught by Okada et al), for the benefit of making the optical pellicle into seamless single body so that no possible cracks or defects would result when the optical pellicle is used in high heat/energy photolithographic process.

With regard to claims 2, 10, and 12, Okada et al teaches that the optical pellicle is made of quartz, (please see column 3, lines 16-25). Since the optical pellicle is made of the same claimed material, this means the material must be sufficient rigid to prevent the damage and distortion, since rigidity is an inherent property. With regard to claim 12, it implicitly true the same quartz material has a single thermal expansion.

With regard to claim 6, the quartz material is transparent to F<sub>2</sub> laser which has wavelength of 157 nm, (please see column 1, line 23-25).

With regard to claim 9, since Okada et al teaches the pellicle sheet and the pellicle frame have the same thickness, respectively, as the instant application, it must implicitly be capable of preventing any damage and distortion to the optical pellicle.

With regard to claim 11, the recessed portion of the quartz optical plate extended from a single surface of the plate to a depth within the plate, (please see Figure 1).

With regard to claims 13-15 and 17, the Okada et al teaches that optical pellicle in general has a rectangular shape and has optical flat recessed portion or pellicle sheet, (please see Figure 1). The openings for allowing the gas to flow through in general have circular shape, (please see Figure 1).

With regard to claim 16, Okada et al teaches to include *dust proofing filter* to cover the vent holes or openings, (please see column 4 lines 33-36).

With regard to claims 30 and 33-34, Okada et al teaches that the optical pellicle is used to cover the photomask (5) in a photolithographic process. With respect to claims 33 and 34, the optical pellicle is mounted *horizontally* with respect to the photomask. With respect to vertical mounting, it is not clear how can it possible to mount the pellicle *vertically* to make it work.

With regard to claims 31 and 32, Okada et al teaches that the optical pellicle has a rectangular shape but it does not teach explicitly that it can also assume circular shape. However it would have been

Art Unit: 2872

obvious modification to one skilled in the art to make the pellicle with other geometric shape such as circular shape for the benefit of making it to best fit to the particularly desired applications.

**5. Claims 18-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Okada et al in view of the patent issued to Nistler et al.**

**Claim 18 has been significantly amended which therefore necessitates the new grounds of rejection.**

Okada et al teaches an *optical pellicle* that is comprised of a *transparent plate* having a *pellicle sheet* (4) serves as the *recessed portion* with a *first thickness* about 0.8 mm or 800 micrometer, (please see column 5, line 58) and a *pellicle frame* (3, Figure 1) serves as the *perimeter* of the plate having a *second thickness* ranging from 1 to 3 mm or even 4 mm, (please see column 4, lines 39-40, and column 5, line 27), wherein the pellicle frame entirely surrounding said recessed portion or the pellicle sheet and the pellicle sheet and pellicle frame together serves as the optical pellicle. Okada et al further teaches that the pellicle frame has a plurality of openings (1, Figure 1) traversing through the pellicle frame or perimeter for introducing a gas flow over the recessed portion upon mounting the optical pellicle to a photomask, (5).

This reference has met all the limitations of the claim. Okada et al teaches that both the pellicle frame and the pellicle sheet are made of *quartz* but it does not teach explicitly that the pellicle frame and pellicle sheet are integrally formed and the recessed portion is made by removing a portion of the transparent plate. Nistler et al in the same field of endeavor teaches that optical element has the recessed portion formed in the quartz substrate plate is formed by, *providing* transparent quartz substrate with the first thickness, providing a *mask*, formed by patterned chromium trace (24 or 32) on a first side of the substrate to cover only the perimeter portion of the substrate with regard to the intended recessed portion placed at the center of the patterned chromium trace, and removing the *uncovered* transparent substrate

Art Unit: 2872

material defined by the patterned mask until the desired second thickness of the recessed portion is reached. The chromium trace or the mask is then removed, (please see column 1-2). The pellicle-like optical element having an integrally formed *perimeter* of a transparent plate entirely surrounds a recessed portion, (please see Figures 1A-1C). It is really within the general skill of a worker in the art and it would have been obvious to one skilled in the art to adopt the teachings of **Nistler et al** to use the method to make the pellicle of **Okada et al** so that the pellicle frame and sheet can be made into a single monolithic piece, (for they are made of same material as taught by Okada et al), for the benefit of making the optical pellicle into seamless single body so that no possible cracks or default would result when the optical pellicle is used in high heat/energy photolithographic process.

With regard to claim 20, both **Okada et al** and **Nistler et al** teaches that the optical plate is made of a single material -- quartz, which therefore has a single thermal expansion. The quartz substrate material is inherently transparent to radiation of 157 nm wavelength.

With regard to claim 21, Okada et al teaches that the pellicle sheet of the recessed portion has a thickness of 0.8 mm or 800 micrometer, (please see column 5, line 58).

With regard to claim 23, these references do not teach explicitly to include the step of adjusting distance between the pellicle and the photomask as claimed. However such step is either implicitly included by making the frame has size about 3 mm or an obvious modification to one skilled in the art for the benefit of making the pellicle with frame having the optimum distance with respect to the photomask.

With regard to claim 24, since Okada et al teaches the pellicle sheet and the pellicle frame have the same thickness, respectively, as the instant application, it must implicitly be capable of preventing any damage and distortion to the optical pellicle.

With regard to claim 26, this reference does not teach explicitly of the steps of planarizing the recessed portion to have optically flat surface and of planarizing the opposed second surface of the transparent substrate plate. However Nistler et al does teach that the recessed portion and the opposite



Art Unit: 2872

side surface of the substrate (12) having planar surfaces. Such steps are therefore either implicitly included in the disclosure or an obvious modification to one skilled in the art for the benefit of making the optical plate with optically flat surfaces to eliminate any unwanted scattering of the light at the surfaces.

With regard to claim 27, Okada et al further teaches that the pellicle frame has a plurality of vent holes (1, Figure 1) formed traversing the frame or perimeter of the pellicle for allowing gas flow in and out of the pellicle region when the pellicle is mounted on a photomask, (please see Figure 1, column 3, lines 16-58).

With regard to claims 28 and 29, Okada et al teaches of mounting the pellicle frame to a photomask, (please see Figure 1). The feature concerning claim 29, is met by the teachings of monolithic formation of the frame and recessed portion of Okada et al in view of Nistler taught in paragraph above.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-3, 6, and 9-34 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2872

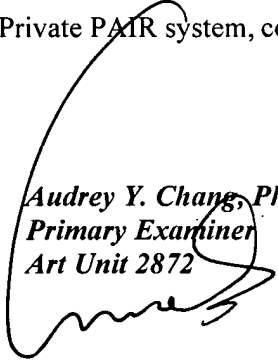
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Audrey Y. Chang, Ph.D.*  
*Primary Examiner*  
*Art Unit 2872*



A. Chang, Ph.D.